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SECTION I: CHAPTER 5

SAMPLE SHIPPING AND HANDLING

A. INTRODUCTION

This chapter contains sample handling, packaging, and mailing instructions for industrial hygiene samples to be shipped to the Analytical Laboratory. Certain Department of Transportation (DOT) Regulations (49 CFR) may apply to shipment of materials. The Laboratory has staff who have received training in the shipment of these materials. Division staff may call for guidance on these matters.

SAMPLE COLLECTION

Chemical Information Manual

Collect all samples following the procedures outlined for the specific chemical or agent in the Chemical Information Manual. The current version of the Chemical Information File is available on OCIS.

Single Component Analysis

Particular attention should be given to substances that must be submitted for analysis of a single component of a mixture.

Interference

- *Lab notification.* Laboratory analysis methods and their results may be susceptible to interference by compounds sometimes present in the sample. For this reason, the Laboratory must be notified if a suspected interfering substance may be present in the sample.

- *Interfering substances.* The following substances should be noted, if suspected or known to be present, on the OSHA-91(S) form:

    - Solvents. Solvents with the same boiling point and polarity as the substance being tested may cause interference, although mass spectral identification will usually resolve any conflict.

    - Free silica. The following chemicals should be noted on the OSHA-91(S) if they are considered to be present in the work environment or as part of the sample:
        aluminum phosphate

feldspars (microcline, orthoclase, plagioclase)
graphite
iron carbide
lead sulfate
micas (biotite, muscovite)
montmorillonite
potash
sillimanite
silver chloride
talc
zircon (zirconium silicate)

- Asbestos. All fibrous materials and high nonfibrous dust levels.

- Metals. High concentrations of other metals and inorganic dust.

BULK SAMPLES

Bulk samples should be submitted to the Laboratory only in the following circumstances:

- When an analysis is required to support a potential violation (e.g., 1% silica in sand-blasting operations).

- As an analytical reference, or to assess solvent or interference.

- When the chemical composition of the material is incomplete or unknown. Discuss composition of an undefined sample with the Regional IH or District Manger and the manufacturer of the material.

- The analysis of bulk samples will generally be semiquantitative and cannot be evaluated on the basis of the sampling analytical errors (SAEs) stated in the Chemical Information Manual.

Bulk samples are required for analyses of the following:

- asbestos,
- mineral oil and oil mist,
- chlorinated camphene,
- chlorodiphenyl,
- silica (quartz, cristobalite),
- hydrogenated terphenyls,
- Portland cement,
- chlorinated diphenyl oxide,
- fugitive grain dust, and

- explosibility testing.

Determine labeling and packaging requirements of the material according to DOT regulations before shipping bulk samples. Staff at the Laboratory can help Division staff with these regulations.

B. MAILING INSTRUCTIONS

SAMPLE IDENTIFICATION

Samples sent to the Laboratory shall be packaged with a copy of the Air Sampling Data Form (OSHA-91(S)). All samples shall be sent to the Laboratory by certified mail or its equivalent in order to maintain a chain of legal accountability or custody. If a sample cannot be shipped to the Laboratory by certified mail, and alternate mode of transportation (Federal Express, Emery Air Express, United Parcel Service, etc.) can be used. A chain of custody for all samples must be obtained regardless of the mode of transportation.

FILTER CASSETTES

Container Parts

The container used by the Division for mailing filters has four parts:

1. A reusable exterior brown cardboard mailing carton.
2. Two brown cardboard flapped inserts.
3. A white box to hold the filter cassettes. This box is shipped inside the brown exterior carton.
4. An interior white die-cut cardboard tray to hold the cassettes in place.

Reusable Container

All of the container parts are reusable. Do not discard the brown exterior mailing carton or the flapped inserts.

Use Of Container

The containers should be used as follows:

1. Place the cassettes in the circular slots of the die-cut white cardboard tray. The samples should be sealed to ensure sample stability and legal accountability.

   NOTE: For asbestos, do not use the cut-out cardboard tray. Securely fasten the cassettes to bubble sheet packing material so that they will not be damaged by outside shocks or by striking against each other.

2. Remove or obliterate all old mailing labels.

3. Include a copy of Form OSHA-91(S) in the box.

4. Do not use or place styrofoam bits or any static producing materials in containers with asbestos or other fibrous air samples.

5. Do not ship bulk samples in the same mailing package as air samples.

SOLID SORBENT TUBES

These tubes may be mailed to the Laboratory in cylindrical containers or other sturdy containers. Tubes should be prepared for mailing to prevent individual tube from becoming mixed with packing material; tubes may be held together with a rubber band, for example. Affix Cal/OSHA 1-HS seal to the samples.

MIDGET IMPINGER OR FRITTED GLASS BUBBLER SAMPLES

Transfer each solution from the impinger or bubbler to a 20-milliliter (ml) vial. Tighten the cap and wrap an elastic tape counterclockwise around the cap so that as the tape shrinks it will tighten the lid. (Be careful not to loosen the cap in the process)

Label the vial with the appropriate sample number for your identification. Affix Cal/OSHA 1-HS seal to the vial in the proper manner.

If the sampling solution was provided from the Laboratory and is a hazardous material by DOT regulations, an instruction sheet on the necessary labeling and packaging for return will have been provided inside the original package in which the solution was mailed to the Division Field Office. If you have any questions on shipping the material, call the Laboratory for assistance.

Affix Cal/OSHA 1-HS seal to the container.

Ship by certified mail if the samples are not hazardous to the Laboratory.

If the samples are hazardous, follow the instructions in the original package from the Laboratory for proper labeling and packaging. If there are questions, Division staff may call the Laboratory for assistance.

WIPE SAMPLES

Wipe filters should be mailed in 20-ml vials. If a hazardous solvent was used to wet the filters, proper labeling and packaging may be required. Wipes samples must be identified as such on the accompanying Cal/OSHA 1-HS seal.

BULK SAMPLES

Bulk solvent samples should never be mailed to the Laboratory in the same package with any other type air sample.

Bulk solvent samples should be shipped in 20-ml glass vials with Teflon™ lined caps. Tighten the cap and wrap elastic tape counterclockwise so that as the tape shrinks it will tighten the lid. Label the vial with the appropriate sample number for your identification. Affix a Cal/OSHA 1-HS seal to the vial in the proper manner. If the material is hazardous according to DOT regulations, it should be properly labeled and packaged. Division staff may call the Laboratory for guidance.

Affix Cal/OSHA 1-HS seal to each bulk sample. The accompanying Cal/OSHA 1H form must identify the shipped material as a bulk sample and must list the air sample numbers corresponding to the bulk sample. The air sample's Cal/OSHA 1H should also indicate that an associated bulk sample is being shipped and the mode of shipment to the Laboratory. If available, include a copy of the material safety data sheet for the bulk sample.

SOIL SAMPLES

Bagging

Soil should be placed in a heavy-duty plastic bag that will not tear, and secured and sealed air-tight with tape. Place the first plastic bag in a second heavy-duty bag for additional protection. The Laboratory provides heavy-duty cotton bags upon request.

Size Of Samples

Samples should vary from 1pint for very fine-grained samples to two quarts for coarse gravel. A typical samples should be approximately 1 quart and weigh 3 pounds.

Sample Identification

Each plastic bag must be sealed for identification with a Cal/OSHA 1-HS seal containing a field number, sampling date, and the sampler's name. A laboratory number will be assigned to each sample at the Laboratory.

Sample Shipping

The heavy-duty bags containing soil samples should be tied at the top and placed in a box for shipment to the Laboratory. The Form Cal/OSHA 1H worksheets should not be in contact with the soil.

A Form Cal/OSHA 1H must be submitted for each soil sample. All of the information boxes 1 through 9 must be correctly entered, or the sample cannot be analyzed. The field number, and the

soil specification or other specific requests should be entered in Box 8. The Laboratory may perform additional tests on occasion.

C. FEDERAL MAILING REGULATIONS

JURISDICTION

When shipping hazardous materials to a laboratory, Federal and State transportation regulations must be followed. Such regulations may prohibit the use of the United States Postal Service (USPS).

RESPONSIBILITY

The shipper is responsible for compliance with applicable transportation or postal laws and regulations governing acceptability to the carrier and additional packaging requirements.

All items that are acceptable for mailing are subject to provisions of Part 124, USPS Manual and Publication 52 of the USPS, Acceptance of Hazardous or Perishable Articles.

The Transportation Safety Act of 1974 extended the Department of Transportation's (DOT) authority over transportation of hazardous or restricted materials. The full text of the hazardous materials regulations is contained in Title 49, Code of Federal Regulations, Part 100-199. It is the shipper's responsibility to comply with all applicable DOT regulations. The Laboratory has staff with training in the shipment of hazardous material. Division staff may call for guidance on these matters.

HAZARDOUS MATERIALS

The main categories of hazardous materials sent to the Laboratory are:

- poisons,
- flammable liquids,
- oxidizers,
- flammable solids,
- corrosive materials (acids and alkalies), and
- irritating materials.

Publication 49 CFR Table 172.101 is the key to understanding current DOT regulations for domestic shipment of hazardous materials. If hazardous materials are to be shipped internationally, then either the International Civil Aviation Organization (ICAO) technical instructions or the International Air Transport Association (IATA) instructions are to be used. To ensure that current regulations are followed, it is important to use only the most recent edition of 49 CFR, ICAO, or IATA.

The USPS and private carriers base their shipping procedures for hazardous materials on the DOT 49 CFR regulations. These regulations are the minimum acceptable for hazardous materials. In some case, the carriers have chosen to be more restrictive than DOT regulations. In using these procedures, it is the shipper's responsibility to determine if the carrier they plan to use is more restrictive than DOT. The shipper must comply with the carrier's requirements.

Notice To The Carrier

For all modes of transportation, the carrier must be clearly informed that hazardous material is being tendered.

Notification must be given. Any person who violates a provision of Title 49 in shipping a hazardous material shall be subject to a civil penalty of not more than $10,000 per violation, and if any such violation is a continuing one, each day of the violation constitutes a separate offense. A person who willfully violates a provision of this title and is convicted of a criminal offense is subject to a fine of not more than $25,000, imprisonment for a term not to exceed 5 years, or both.

The great variety of chemicals precludes the listing of each item that may be mailed.

Publications available from the United States Postal Service give an indication of what can be mailed.

Certain chemicals are not mailable as bulk samples. Special handling or analysis may be needed in these cases. Call the Technical Center for guidance.

Most solid sorbent tubes, silica-gel tubes, filters, and wipe samples will not be classified as hazardous materials and can be shipped as regular certified mail through the USPS.

When a restricted article is tendered for shipment, the customer is required properly to identify, classify, package, mark, label, and certify all articles as specified in Title 49.

Since all samples are subject to possible litigation, there has to be a chain and/or proof of custody of the samples from the field to the Laboratory. The preferred form is the certified mail receipt. Samples shipped by certified mail go first class (air mail).

Detailed instructions on sample shipping according to DOT regulations are available directly from the Laboratory.